

1st, 3rd to 9th, 11th, 14th, 20th; Ohio valley and Tennessee, 11th 13th, 14th, 15th, 16th, 19th, 24th; Lower Lake region, 7th, 10th to 13th, 15th; Upper Lake region, 12th, 14th; Upper Mississippi valley, 2d, 6th, 9th, 11th; Missouri valley, 1st, 9th, 14th; Southern Plateau, 7th 8th, 31st.

### MISCELLANEOUS PHENOMENA.

**Sunsets.**—The characteristics of the sky at sunset as indicative of fair or foul weather for the succeeding twenty-four hours have been observed at all Signal Service stations. Reports from 183 stations show 5,625 observations to have been made, of which 28 were reported doubtful; of the remainder, 4,644, or 83.0 per cent., were followed by the expected weather.

**Sun Spots.**—The following record of observations, made by Mr. D. P. Todd, Assistant, has been forwarded by Prof. S. Newcomb, U. S. Navy, Superintendent, Nautical Almanac Office, Washington, D. C.:

| DATE—<br>July, 1881. | No. of new— |        | Disappeared by<br>solar rotation. |        | Reappeared by<br>solar rotation. |        | Total number<br>visible. |        | REMARKS.                 |
|----------------------|-------------|--------|-----------------------------------|--------|----------------------------------|--------|--------------------------|--------|--------------------------|
|                      | Groups      | Spots. | Groups                            | Spots. | Groups                           | Spots. | Groups                   | Spots. |                          |
| 1, 5 p. m.....       | 1           | 2      | 0                                 | 0      | 1                                | 2      | 6                        | 45†    | Many of the spots small. |
| 2, 8 a. m.....       | 0           | 0      | 0                                 | 0      | 0                                | 0      | 0                        | 40†    |                          |
| 3, 5 p. m.....       | 1           | 5      | 0                                 | 5      | 1                                | 5      | 7                        | 35†    |                          |
| 4, 1 p. m.....       | 0           | 0      | 1                                 | 5      | 0                                | 0      | 6                        | 25†    |                          |
| 5, 8 a. m.....       | 2           | 10     | 0                                 | 0      | 0                                | 0      | 8                        | 35†    |                          |
| 6, 11 a. m.....      | 0           | 0      | 1                                 | 5      | 0                                | 0      | 5                        | 25†    |                          |
| 6, 8 a. m.....       | 1           | 10     | 1                                 | 5      | 1                                | 5      | 6                        | 30†    |                          |
| 9, 6 p. m.....       | 0           | 6      | 1                                 | 5      | 0                                | 0      | 5                        | 35†    |                          |
| 10, 11 a. m.....     | 1           | 1      | 0                                 | 0      | 1                                | 1      | 5                        | 35†    |                          |
| 11, 8 a. m.....      | 0           | 0      | 0                                 | 0      | 0                                | 0      | 5                        | 30†    |                          |
| 12, 4 p. m.....      | 0           | 0      | 0                                 | 0      | 0                                | 0      | 4                        | 25†    | Many of the spots small. |
| 14, 7 a. m.....      | 0           | 0      | 0                                 | 5      | 0                                | 0      | 4                        | 20     |                          |
| 16, 10 a. m.....     | 0           | 5      | 1                                 | 5      | 0                                | 0      | 2                        | 20†    |                          |
| 17, 12 m.....        | 1           | 3      | 0                                 | 5      | 1                                | 3      | 3                        | 15     |                          |
| 18, 6 p. m.....      | 1           | 3      | 0                                 | 5      | 0                                | 0      | 4                        | 13     |                          |
| 19, 11 a. m.....     | 0           | 4      | 1                                 | 5      | 1                                | 2      | 4                        | 15     |                          |
| 21, 6 p. m.....      | 1           | 15     | 1                                 | 5      | 2                                | 10     | 8                        | 25†    |                          |
| 23, 8 a. m.....      | 4           | 20†    | 0                                 | 5      | 0                                | 0      | 7                        | 40†    |                          |
| 24, 9 a. m.....      | 0           | 25†    | 0                                 | 5      | 0                                | 0      | 7                        | 65†    |                          |
| 25, 5 p. m.....      | 0           | 0      | 0                                 | 5      | 0                                | 0      | 7                        | 60†    |                          |
| 26, 9 a. m.....      | 0           | 0      | 0                                 | 5      | 1                                | 2      | 7                        | 65†    |                          |
| 28, 8 a. m.....      | 1           | 10     | 1                                 | 5      | 1                                | 2      | 8                        | 65†    |                          |
| 29, 8 a. m.....      | 1           | 2      | 0                                 | 5      | 1                                | 2      | 8                        | 65†    |                          |
| 31, 10 a. m.....     | 2           | 5      | 1                                 | 5      | 2                                | 5      | 8                        | 60†    |                          |

† Approximated.

Faculae were seen at the time of every observation

Mr. H. D. Gowey, at North Lewisburg, Ohio, reports: Spots observed every day during the month, most numerous, 1st; fewest 17th; largest, during the latter part of the month. Mr. D. Trowbridge, at Waterburg, N. Y., reports as follows: 1st, 5 groups, 9 spots, 1 group just appearing by solar rotation; 2nd, same as observed on 1st, 7 spots; 5th, 2 groups, 3 spots, 1 new group appeared by rotation; 6th, 3 groups, 7 spots, 1 group near the middle of the disk, not seen on the 5th; 9th, 5 groups, 6 spots, 1 group just appeared by rotation; 11th, 3 groups, 7 spots, 2 were bright and large; 12th, 4 groups, 6 spots, 3 groups same as observed on 11th, and one new small spot; 13th, 4 groups, same as observed on 12th, 5 spots; 15th, 2 groups, 3 spots, 1 group disappeared by rotation and one gone out; 16th, 1 group, 4 spots, 1 group gone out; 18th, 3 groups, 3 spots, largest group observed on the 16th, has disappeared by rotation, 2 groups supposed to have appeared by rotation; 19th, 2 groups, 5 spots; 21st, 3 groups, 4 spots; 22d, 4 groups, 4 spots, 1 new group appeared by rotation; 24th, 5 groups, 8 spots; 25th, 4 groups, 13 spots, same groups as observed on 24th; 26th, 5 groups, same as 25th; 28th, 4 groups, 9 spots, cloudiness interfering with observation; 30th, 7 groups, 19th spots, 1 very fine group; 31st, 6 groups, 10 spots, some changes.

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